NORTHWEST ENVIRONMENTAL ADVOCATES

February 9, 2016

Gina McCarthy, Administrator
U.S. Environmental Protection Agency
USEPA Ariel Rios Building (AR)
1200 Pennsylvania Avenue N.W.
Washington, DC 20004

Certified Mail; Return Receipt Requested

Re: **Second Follow Up to October 28, 2013 Northwest Environmental Advocates' Petition for Rulemaking on Water Quality Criteria for Toxics in the State of Washington**

Dear Ms. McCarthy:

As you know, on October 28, 2013, Northwest Environmental Advocates sent you a petition to update the State of Washington's aquatic life criteria in its water quality standards. We received no response. On August 31, 2015 we sent a follow-up letter urging you to respond to the petition and pointing out that EPA has expressed serious concerns about toxics in Washington waters, in particular those that affect the health of Puget Sound species, including threatened and endangered species. In response to our August letter, EPA wrote thanking us for our "valuable input" as it considers the matter but provided no indication of when, if ever, the agency intends to respond to the petition or take action to update Washington's aquatic life criteria.

The purpose of this letter is to point out some minor errors in our petition and to further elucidate the point that EPA's purported concern about the impacts of toxics on aquatic life in Washington's waters is not mirrored in its taking actions that are fully authorized—indeed required—by the Clean Water Act. Given the passage of time in which the Washington Department of Ecology has completely ignored its duty to update its aquatic life criteria and the inexcusable delays and fumbling in its various attempts to update its human health criteria, EPA simply cannot rely upon the state. With many of the species that depend upon fresh and marine waters of Washington facing the threat of extinction, it is equally inexcusable that EPA has taken no steps to bring this state's water quality standards for toxics into the correct century.

EPA Understanding of Toxic Impacts on Washington Waters, Especially Puget Sound

As we pointed out in our letter last year, EPA has long expressed concern about the health of Puget Sound including toxic contamination of many species, some of which are listed as threatened or endangered under the Endangered Species Act (ESA). One of those is the Southern Resident killer whale, a species that depends upon salmon, which themselves are listed under the ESA. Studies have demonstrated that the southern residents contain higher

concentrations of persistent organic pollutants than the northern residents.[1] Because Chinook salmon are the primary prey of these killer whales,[2] subsequent studies have focused on the differences in contaminant levels in the salmon consumed by the different whale populations. Indeed, results demonstrate that concentrations of these persistent pollutants "were higher in coho and Chinook populations that have more coastal distributions than those measured in salmon species (e.g., chum, pink, sockeye) with more oceanic distributions." *Id.*[3]

Puget Sound is a key source of such contaminated salmon prey, including the Chinook. For example, a 2009 study showed that for "[t]he average PCB concentration measured in skinless muscle tissue samples of subadult and maturing Chinook salmon collected from Puget Sound was 53 ng/g (wet weight), which was 3–5 times higher than those measured in six other populations of Chinook salmon on the West Coast of North America."[4] Similarly, populations of

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[1] Sandra O'Neill *et al.*, *Regional patterns of persistent organic pollutants in five Pacific salmon species (Oncorhynchus spp) and their contributions to contaminant levels in northern and southern resident killer whales (Orcinus orca),* 2006 Southern Resident Killer Whale Symposium, April 3-5, 2006, Seattle WA 98103 ("Previous studies on killer whales (Orcinus orca) have shown that southern residents contain higher concentrations of persistent organic pollutants (POPs) than northern residents (Ross et al., 2000; Rayne et al., 2004) and other North Pacific resident killer whale populations (Ylitalo et al., 2001; Herman et al., 2005). Elevated contaminant exposure in southern residents may be attributed to dietary differences between the two whale populations or to regional differences in concentrations of POPs in their prey. Based on observational data and stomach contents analyses, Ford et al. (1998) identified Pacific salmon (Oncorhynchus spp), especially Chinook salmon (O. tshawytscha), as the primary prey of southern and northern resident killer whales in their summer feeding ranges.").

[2] *See, e.g.*, Michael J. Ford *et al.*, *Estimation of a Killer Whale (Orcinus orca) Population's Diet Using Sequencing Analysis of DNA from Feces*. PLoS ONE 11(1): e0144956. doi:10.1371/journal.pone.0144956 (Jan. 6, 2016).

[3] "Regional variation in POP exposure was also evident in Chinook salmon (Figure 1) and appears to be associated with differences in marine distribution of these species. For example, Chinook salmon returning to Puget Sound had significantly higher concentrations of PCBs and PBDEs compared to other Pacific coast salmon populations we sampled. Furthermore, Chinook salmon that resided in Puget Sound in the winter rather than migrate to the Pacific Ocean ("residents") had the highest concentrations of POPs, followed by Puget Sound fish populations believed to be more ocean-reared. Fall Chinook from Puget Sound have a more localized marine distribution in Puget Sound and the Georgia Basin than other populations of Chinook from the west coast of North America and are more contaminated with PCBs (2 to 6 times) and PBDEs (5 to 17 times)."

[4] Sandra M. O'Neill *et al.*, *Marine Distribution, Life History Traits, and the Accumulation of Polychlorinated Biphenyls in Chinook Salmon from Puget Sound, Washington, Transactions* of the American Fisheries Society 138:616–632 (2009) ("Concentrations in the Puget Sound samples varied from 10 to 220 ng/g. A comparison of PCB body burdens between subyearling smolts and returning adults revealed that almost all of the PCBs (.96%) were accumulated in the marine habitats. Surprisingly, although PCBs were mostly accumulated in marine habitats, PCB exposure was lowest in the largest fish that spent the most time in

Pacific herring have demonstrated environmental segregation between Puget Sound populations and those that live in the Strait of Georgia.[5] That makes both the populations in Puget Sound and the whales that depend upon them at greater risk of exposure to toxic pollutants.

In addition to being the receiving water of the many sources of toxics that contribute to the pollution of its water column, sediment, and food chain, Puget Sound is hydrologically isolated from the Pacific Ocean, and therefore naturally accumulates toxic contaminants that would otherwise leave the ecosystem and enter the ocean.[6] EPA has acknowledged this same concern

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saltwater. Collectively, saltwater age, fish size, and lipids only accounted for 37% of the observed variation in PCB concentration, indicating that some other attribute of the fish's marine ecology accounted for the variation in PCB levels among Puget Sound Chinook salmon and for their elevated PCB levels relative to other West Coast populations. We hypothesized that residency in the contaminated Puget Sound environment was a major factor contributing to the higher and more variable PCB concentrations in these fish. This hypothesis was supported with an independent data set from a fishery assessment model, which estimated that 29% of subyearling Chinook salmon and 45% of yearling out-migrants from Puget Sound displayed resident behavior."); *see also* Sandra M. O'Neill, *et al., Elevated levels of persistent organic pollutants in free ranging populations of Puget Sound populations of Pacific salmon: the importance of residency in Puget Sound*, Proceedings of the 2005 Puget Sound Georgia Basin Research Conference ("[T]hese results suggest that residence in Puget Sound exposes Chinook salmon to higher POP [persistent organic pollutants] concentrations and the longer a Chinook resides in Puget Sound, the greater its exposure to POPs will be.").

[5] James E. West, *et al., Spatial extent, magnitude, and patterns of persistent organochlorine pollutants in Pacific herring (Clupea pallasi) populations in the Puget Sound (USA) and Strait of Georgia (Canada)*, Science of the Total Environment 394: 369 (2008) ("Puget Sound herring were 3 to 9 times more contaminated with polychlorinated biphenyls (PCBs) compared to Strait of Georgia herring and 1.5 to 2.5 times more contaminated with DDTs. . . . A multidimensional scaling map of the pattern or "fingerprint" of POPs in the six herring populations suggests strong environmental segregation of Puget Sound herring from the Strait of Georgia populations, and isolation of all Strait of Georgia populations from each other. This segregation likely resulted from differential exposure to contaminants, related to where these populations reside and feed, rather than differences in their age, size, trophic level, or lipid content.").

[6] *See, e.g.*, Tracy K. Collier, *et al., Toxic Chemical Contaminants and Puget Sound, available at* http://depts.washington.edu/uwconf/2007psgb/2007proceedings/papers/12e_colli.pdf ("Puget Sound is unique among of our nation's estuaries in being a deep fjord-like structure (resulting from its formation by glaciers) that contains many urban areas within its drainage basin. Because there are several sills that restrict exchange with oceanic waters, Puget Sound is relatively poorly flushed compared to other urbanized estuaries of North America. Thus, toxic chemicals that enter Puget Sound have longer residence times within the system, and this entrainment of toxics can result in biota being exposed to increased levels of contaminants for a given input, compared to other large estuaries. This hydrologic isolation also puts the Puget Sound ecosystem at higher risk from other types of pollutants that enter the system, such as nutrients and pathogens. The problems in Puget Sound associated with contaminants are exacerbated by the added problem of biological isolation. Because Puget Sound is a deep,

as a key basis for reducing the flow of toxic contaminants into the Great Lakes, noting that the lakes "have proved to be sensitive to the effects of pollutants that accumulate in them. The internal responses and processes that operate in the Great Lakes because of their depth and long hydraulic residence times cause pollutants to recycle between biota, sediments and the water column."[7] Similar to the Great Lakes, not only is Puget Sound hydrologically isolated but many species in Puget Sound are biologically isolated, meaning that they take advantage of its deep waters to remain there during their entire life cycle. To address this special problem facing the Great Lakes, EPA published the Great Lakes Initiative (GLI), an extensive guidance including water quality criteria for protection of aquatic life and human health, and notably wildlife uses, which its recommended criteria otherwise ignore.[8] The GLI also includes methodologies and implementation procedures for developing Total Maximum Daily Loads (TMDL) and pollution controls such as NPDES discharge permits, all of which are intended to lessen the burden that toxic contaminants place on the system's designated uses. Unlike its approach to protecting the water quality and species of the Great Lakes, however, EPA has not recognized the need for any special treatment of Puget Sound waters—in either the establishment of water quality standards or regulatory mechanisms—to ensure protection of aquatic and aquatic-dependent species. In fact, it has done the opposite, by failing to ensure that even the basics of the Clean Water Act are in place.

Copper continues to be a prime example of the problem, as demonstrated in our earlier letter. EPA and numerous other federal agencies have recognized this, yet EPA continues to do nothing. We draw your attention to the following excerpt from the May 3, 2012 Puget Sound Region Federal Agency Action Plan prepared by no fewer than 14 federal agencies in an effort to respond to "concerns raised by Western Washington Treaty Tribes about continued habitat losses and associated diminishment of fishery resources":

> The FY12 Puget Sound funding allocation reflects EPA's desire to work with its partners to reverse the trend of habitat loss at the local level and improve salmon and shellfish recovery. This focus on shellfish, salmon and habitat is consistent with the areas that the Puget Sound Partnership focused on in updating the Action Agenda: 1) land development, 2) loss of floodplain function, 3) shoreline alteration, 4) urban stormwater runoff, and 5) wastewater. The funding allocation provides specific resources to address stormwater and its impacts on salmon, shellfish and habitat. Stormwater causes pre-spawning mortality in high percentages of healthy Coho salmon in Seattle creeks within hours of the fish entering those waters. Stormwater is also the primary way that many of the

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almost oceanic habitat, the tendency of a number of species to migrate outside of Puget Sound is limited relative to similar species in other large urban estuaries. This high degree of residency for many marine species, combined with the poor flushing of Puget Sound, results in a more protracted exposure to contaminants. It is this combination of hydrologic and biologic isolation that makes the Puget Sound ecosystem highly susceptible to inputs of toxic chemicals compared to other major estuarine ecosystems.") (emphasis in original).

[7] 60 Fed. Reg. 15366, 15367 (March 23, 1995).

[8] *Id.* at 15366; 40 C.F.R. § 132.6 Table 4 (Water Quality Criteria for Protection of Wildlife).

> contaminants of concern enter Puget Sound; pollutants like copper have been implicated along with habitat destruction as potentially leading to the poor marine survival rate observed for juvenile salmonids in Puget Sound. In rural areas, stormwater is a major pathway for pathogens entering shellfish beds. Habitat destruction by high stormwater flows will be further exacerbated by climate change.[9]

How can Washington properly regulate copper when its water quality criteria for freshwater copper are out-of-date and the subject of three jeopardy opinions in Oregon and Idaho?

The natural isolation of Puget Sound waters, in combination with high levels of urbanization that have contributed to their increasing contamination, strongly support EPA's immediate action on the first of these steps: establishing criteria that protect the species. At a minimum that should include updating the aquatic life criteria as our petition requested.

Errors in the 2013 Petition

As our August letter noted, NWEA's petition asserted there were 19 pollutants identified as being outdated, and omitted the then-recently updated 304(a) criteria for ammonia.[10] In fact, the history of Washington's aquatic life criteria is somewhat more complicated. The Federal Register notice for the National Toxics Rule (NTR) indicated that Washington would be covered under the NTR for: freshwater acute and chronic arsenic and selenium, marine acute arsenic and selenium, and marine chronic arsenic, copper, selenium, and cyanide.[11] However, EPA's March 1993 approval letter for Washington's 1992 submission of water quality standards stated that, contrary to the information in the notice, all freshwater and marine criteria for arsenic and selenium did not need to be in the NTR after all, leaving only the copper and cyanide criteria. In1997, Washington adopted revised marine copper (acute and chronic) and site-specific (inside Puget Sound) marine cyanide (acute and chronic) and in 2003 it adopted marine chronic cyanide criteria. As a result, in 2007, EPA removed Washington for all copper and cyanide aquatic life criteria from the NTR. In 1997 the Washington Department of Ecology ("Ecology") also revised criteria, including footnotes, for arsenic, cadmium, chromium III, chromium VI, copper, lead, mercury, nickel, selenium, silver, and zinc. The majority of these revisions made the criteria less stringent and Washington also failed to adopt or revise aquatic life criteria for which EPA-recommended criteria were then available. In 2006, Ecology revised its ammonia criteria, which EPA approved in 2008, prior to EPA's issuing its new recommended 304(a) ammonia criteria in 2013. Curiously, Ecology also appears to assert that it has updated its criteria as of

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[9] *Id.* at 8, *available at* http://www.westcoast.fisheries.noaa.gov/publications/habitat/puget_sound_action_plan_050312.pdf

[10] Letter from Nina Bell, NWEA to Gina McCarthy, EPA Administrator, *Follow Up to October 28, 2013 Northwest Environmental Advocates' Petition for Rulemaking on Water Quality Criteria for Toxics in the State of Washington*, fn 1 (The pollutants identified in the petition included: acrolein, arsenic, carbaryl, cadmium, chromium (III), chromium (VI), copper, diazinon, dieldrin, endrin, gamma-BHC (Lindane), mercury, nickel, nonylphenol, parathion, pentachlorophenol, selenium, tributyltin, and zinc.).

[11] 57 Fed Reg. 60848 (Dec. 22, 1992).

May 2013[12] as well as to acknowledge that its cadmium criteria are seriously outdated.[13]

Notwithstanding these revisions, most of which provided less protection to Washington's aquatic life designated uses, it remains true that since December 5, 1997—18 years ago— Washington has not revised or adopted many aquatic life criteria as required by the Clean Water Act. Among those for which criteria presumably were never adopted because they are not priority pollutants and those that have not been adopted or revised to be consistent with EPA's 304(a) recommendations because Washington is indifferent to protecting aquatic life are: acrolein, aluminum, ammonia, arsenic, carbaryl, cadmium, chromium III, copper, cyanide, demeton, diazinon, dieldrin, endrin, guthion, heptachlor epoxide, iron, Lindane, malathion, mercury, methoxychlor, mirex, nickel, nonylphenol, pentachlorophenol, PCBs, selenium, and tributylin.

Once again, we urge EPA to grant our petition in order that it may take the first steps to bringing the authority of the Clean Water Act to bear on the toxic pollution in Washington's waters and provide a greater likelihood of protection and recovery of the state's threatened, endangered, candidate, and proposed species.

Sincerely,

Nina Bell
Executive Director

cc: Dennis McLerran, Regional Administrator
Dan Opalski, Director, Region 10 Office of Water and Watersheds

Attachments:

1. Sandra O'Neill *et al.*, *Regional patterns of persistent organic pollutants in five Pacific*

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[12] *See* Washington Department of Ecology, Water Quality, Ground & Surface Water Quality Standards, Surface Water Quality Standards, Criteria, Toxics Standards and Criteria, Aquatic Life Protection at http://www.ecy.wa.gov/programs/wq/swqs/toxics.html ("Important note: In the 2006 rule adoption some of the metals formulas were slightly modified during the official publication process. Please see the "Spreadsheet for Calculating Toxics" to correctly calculate the freshwater metals criteria. This accidental error in the rule language is being addressed." Despite this statement there are no differences in the metals formulas between the spreadsheet and the 1997 submission to EPA. In addition, the 2006 corrections were entirely typographical.); Washington Department of Ecology, *TSD Calculations – Water Quality Criteria Table* (spreadsheet) ("Criteria last updated May 2013) *available at* http://www.ecy.wa.gov/programs/wq/permits/PermitCalcMarch9-2015.xlsm (last accessed Jan. 21, 2016).

[13] *Id.* In this spreadsheet, Ecology has inserted notes next to the two freshwater cadmium criteria stating "EPA promulgated a new criteria [sic] on 4/12/01 . . . EPA expects Ecology to adopt this new criteria [sic] by 2006."

salmon species (Oncorhynchus spp) and their contributions to contaminant levels in northern and southern resident killer whales (Orcinus orca), 2006 Southern Resident Killer Whale Symposium, April 3-5, 2006, Seattle WA 98103.

2. Sandra M. O'Neill *et al.*, *Marine Distribution, Life History Traits, and the Accumulation of Polychlorinated Biphenyls in Chinook Salmon from Puget Sound, Washington, Transactions* of the American Fisheries Society 138:616–632 (2009).

3. Sandra M. O'Neill, *et al.*, *Elevated levels of persistent organic pollutants in free ranging populations of Puget Sound populations of Pacific salmon: the importance of residency in Puget Sound*, Proceedings of the 2005 Puget Sound Georgia Basin Research Conference.

4. James E. West, *et al.*, *Spatial extent, magnitude, and patterns of persistent organochlorine pollutants in Pacific herring (Clupea pallasi) populations in the Puget Sound (USA) and Strait of Georgia (Canada)*, Science of the Total Environment 394: 369 (2008).

5. Tracy K. Collier, *et al.*, *Toxic Chemical Contaminants and Puget Sound* (2007).

6. Michael J. Ford *et al.*, *Estimation of a Killer Whale (Orcinus orca) Population's Diet Using Sequencing Analysis of DNA from Feces*. PLoS ONE 11(1): e0144956. doi:10.1371/journal.pone.0144956 (Jan. 6, 2016).

7. EPA *et al.*, Puget Sound Region Federal Agency Action Plan (May 3, 2012).